

## **CLAIMS**

We claim:

1. A method for selectively controlling scattering and absorption of electromagnetic waves that are incident upon a material that contains particles suspended in a medium, the method comprising the steps of:
  - selecting the particles and the medium that have a refractive index that either maximizes or minimizes, scattering or absorption of electromagnetic waves of a specified wavelength or within a specified range of wavelengths.
2. A method for minimizing scattering of electromagnetic waves incident upon a material containing particles suspended in a medium, the method comprising the steps of:
  - identifying possible combinations of particles and mediums;
  - calculating a scattering extinction for each combination based on a refractive index ratio and particle size of each combination, at a specified wavelength; and
  - dividing the scattering extinction by the associated particle size to arrive at a value for each combination, wherein the combination with the smallest value is the combination that will minimize scattering of the electromagnetic waves.
3. The method of claim 2, wherein backscattering of the electromagnetic waves is minimized.
4. The method of claim 2, wherein the particles are spherical in shape.
5. The method of claim 2, wherein the particles and medium of the material are selected so as to also minimize absorption and maximize backscatter of the

electromagnetic waves, thereby making the material a good choice for identification friend or foe type applications.

6. A method for minimizing absorption of electromagnetic waves that are incident upon a material containing particles that are suspended in a medium, comprising the steps of:

- identifying potential combinations of particles and mediums;
- calculating an absorbing extinction for each combination based on a refractive index ratio and particle size of each combination, at a specified wavelength; and
- dividing the absorbing extinction by the associated particle size to arrive at a value for each combination, wherein the combination with the smallest value is the combination that will minimize absorbing of the electromagnetic waves.

7. The method of claim 6, wherein the particles are spherical in shape.